TECHNICAL REVIEW DOCUMENT For OPERATING PERMIT 020PPB249 to be issued to:

Aquila, Inc. – Pueblo AIP Station Pueblo County Source ID 1010396

Prepared February 2003
Jacqueline Joyce, Review Engineer
Revised March 2003 and April 18, 2003
Revised June 5, 2003 Based on Additional Information Submitted During the Public Comment Period

I. Purpose

This document will establish the basis for decisions made regarding the Applicable Requirements, Emission Factors, Monitoring Plan and Compliance Status of Emission Units covered within the Operating Permit proposed for this site. It is designed for reference during review of the proposed permit by the EPA and during Public Comment. The conclusions made in the report are based on information provided in the original application submittal of November 4, 2002, additional information provided December 16, 2002, comments on the draft permit and technical review document received on April 15, 2003, additional information received during the Public Comment period, e-mail correspondence and telephone conversations with the source. This narrative is intended only as an adjunct for the reviewer and has no legal standing.

Any revisions made to the underlying construction permits associated with this facility made in conjunction with the processing of this operating permit application have been reviewed in accordance with the requirements of Regulation No. 3, Part B, Construction Permits, and have been found to meet all applicable substantive and procedural requirements. This operating permit incorporates and shall be considered to be a combined construction/operating permit for any such revision, and the permittee shall be allowed to operate under the revised conditions upon issuance of this operating permit without applying for a revision to this permit or for an additional or revised construction permit.

II. Source Description

This source is classified as an electric services facility under Standard Industrial Classification 4911. This facility consists of four identical diesel-powered internal combustion engines. Each engine produces 2.5 megawatts (MW) of power. Also located at the facility is a 200,000 gallon diesel fuel storage tank.

This facility is located at 475 William M. White Blvd, in Pueblo, CO. The site is about 1 and ½ miles west of Pueblo Airport. This facility is located in an area that is designated as attainment for all criteria pollutants. There are no affected states within 50 miles of this facility. The Great Sand Dunes National Wilderness Area, a federal class I designated area, is within 100 km of this facility. The Great Sand Dunes National Monument, those portions not included as National Wilderness Areas, is federal land within 100 kilometers of the facility. This area has been designated by the State to have the same sulfur dioxide increment as federal Class I designated areas.

This facility is not classified as a major stationary source for purposes of prevention of significant deterioration (PSD) review requirements. Emissions at the facility are as follows:

Pollutant	Potential to Emit (tons/yr)	Actual Emissions (tons/yr)
PM	6.5	1.04
PM ₁₀	6.5	1.04
SO ₂	16.7	2.12
NO_X	249	39.86
CO	58.4	9.35
VOC	11.4	1.44
HAPS	< 0.5	Below de minimis

Potential to emit is based on permitted emissions. Actual emissions are based on the APEN submitted June 4, 2003 and reflect 2002 operating levels.

The source indicated in their Title V permit application that this facility is not subject to Section 112(r), the Accidental Release Requirements.

Although these units commenced operation at the Pueblo AIP facility in December 2002, the source submitted information on December 16, 2002 indicating that these units had previously operated in Israel and generated power for the their grid, from 1969 until 1996. The source presumed and the Division agreed that since the definition of "commenced commercial operation" in 40 CFR Part 72 did not specify where power was to be sold, that these units would be considered existing units since they commenced commercial operation prior to November 15, 1990. However, the Division later consulted with personnel from EPA's Clean Air Markets Division and they indicated that since power was not generated for sale within the 48 contiguous states prior to November 15, 1990 they could not be considered existing units. However, since the units serve generators less than 25 MW and burn clean fuel, these units can qualify for the new unit exemption in accordance with the provisions of 40 CFR Part 72 § 72.7. The source submitted a new unit notification form on April 15, 2003.

None of the engines are equipped with control devices, therefore the Compliance Assurance Monitoring (CAM) requirements do not apply to these units.

III. Emission Sources

The following sources are specifically regulated under terms and conditions of the Operating Permit for this Site.

A. Units E01 thru E04: General Motors, Diesel Fuel-Fired Internal Combustion Engines, Model No. MP-45, Serial Nos. 63573 (E01), 63575 (E02), 63572 (E03), and 63574 (E04), Each Rated at 27.72 mmBtu/hr and 3500 hp (Site Rated). Each Unit is capable of Generating 2.5 MW of Electric Power.

1. Applicable Requirements: Colorado Construction Permit 01PB0247 was first issued for these units on June 15, 2001 as an initial approval permit. The permit was subsequently modified on April 23, 2002 to revise the quarterly hours of operation limit on the engines. The permit was again revised and reissued on July 22, 2002 to change the name and to use emission factors from performance testing. The NO_X and CO emission factors from the performance test were higher than the emission factors used to set the construction permit limits. Therefore, the CO emission limits were increased to allow operation of engines near the hourly limitations. According to the Title V permit application, these engines were first placed in service in Colorado in January 2002.

The due date of the first semi-annual monitoring and deviation report required by this operation permit will be more than 180 days after the initial approval construction permit 01PB0247 was issued and/or the equipment commenced operation. Therefore, under the provisions of Regulation No. 3, Part C, Section V.A.2., the Division is allowing the initial approval construction permit to continue in full force and effect and will consider the Responsible Official certification submitted with that report to serve as the demonstration required pursuant to Regulation No. 3, Part B, Section IV.H. and no final approval construction permit will be issued. The appropriate provisions of the initial approval construction permit have been directly incorporated into this operating permit.

Colorado Construction Permit 01PB0247 (initial approval modification #2, issued July 22, 2002) contains the following applicable requirements:

 Opacity shall not exceed 20% during normal operation of the source. During periods of startup, process modification, or adjustment of control equipment visible emissions shall not exceed 30% opacity for more than six minutes in any sixty consecutive minutes (condition 2).

Note that Colorado Regulation No. 1 does not identify the 20% opacity requirement as a condition that only applies during normal operation and EPA has objected, in comments on another operating permit, to the term "normal operations" applied to the 20% opacity standard. The specific operational activities subject to the 30% opacity requirement are also

conditions that can be considered "normal operation". Therefore, the language in the permit will not specify "normal operation".

The 30% opacity requirement applies under other specific activities than those indicated in the construction permit. However, the Division considers that these other specific activities do not apply to engines. In addition, since the engines do not have control devices, the Division considers that adjustment or occasional cleaning of control equipment are specific activities that do not apply to the engine. Process modifications may apply to engines, however, based on engineering judgment, the Division believes that such activities would be unlikely to occur for longer than six minutes. Startup is an activity that applies to these engines, however based on engineering judgment the Division believes that startup for these engines is quick and lasts less than twelve (12) minutes. Under the Reg 1 30% opacity standard, one 6 minute interval in each hour while one of the specific activities is occurring is not subject to an opacity limitation. For the remainder of the hour, the opacity emissions are limited to 30%, however, the 30% opacity standard is based on a six minute average. Therefore, for an emission unit that takes less than twelve (12) minutes to start up, the 30% opacity standard is not applicable. Therefore, the 30% opacity requirement has not been included in the operating permit.

 This source shall be limited to throughput as listed below and all other activities, operational rates and numbers of equipment as stated in the application. Monthly records of the actual consumption rate shall be maintained by the applicant and made available to the Division for inspection upon request (condition 4).

Consumption of distillate fuel oil for combustion in all the engines, together, shall not exceed:

Period	June – Aug.	Sept. – Nov.	Dec. – Feb.	Mar. – May	Annual *
Limit, gallons	680,400	226,800	108,000	64,800	1,080,000

Hours or operation of each engine shall not exceed 1,362 hrs/yr

During the first twelve (12) months of operation, compliance with both the quarterly and yearly consumption limitations shall be required. After the first twelve (12) months of operation, compliance with only the yearly limitation shall be required. Compliance with the yearly consumption limits shall be determined on a rolling twelve (12) month total.

The draft permit requires the source to use emission factors in units of lbs/mmBtu to monitor compliance with the emission limitations. Based on

those emission factors, the fuel consumption limit in the current construction permit and an assumed heat value of 140,000 Btu/gal, the engines would emit about 208 tons/yr of NO_X. Since the primary means of monitoring compliance with the annual emission limitations is based on the emission factor and fuel consumption, the source requested that the hours of operation limit for each engine be removed and that the fuel consumption limit be increased to 1.29 million gallons per year. The Division agrees and has removed the hours of operation limit and increased the fuel consumption limit to 1.29 million gallons per year. The source submitted an APEN on June 4, 2003 (during the Public Comment period) requesting the increased fuel consumption limit.

Since the engines commenced operation in Colorado in January 2002 and have therefore been in operation for one year, the quarterly limits will not be included in the operating permit.

 Total facility emissions of air pollutants shall not exceed the following limitations. Compliance with the annual limits shall be determined on a rolling twelve month total (condition 5).

 $\begin{array}{lll} \mbox{Particulate Matter:} & 6.5 \ tons/yr \\ \mbox{PM$_{10}$ (Particulate Matter < 10 μm):} & 6.5 \ tons/yr \\ \mbox{Sulfur Dioxide:} & 13.2 \ tons/yr \\ \mbox{Volatile Organic Compounds:} & 9.0 \ tons/yr \\ \mbox{Carbon Monoxide:} & 58.4 \ tons/yr \\ \end{array}$

Nitrogen Oxides:

Period	June – Aug.	Sept. – Nov.	Dec. – Feb.	Mar. – May	Annual
Limit, tons	156.9	52.3	24.9	15.0	249.0

During the first twelve (12) months of operation, compliance with both the quarterly and yearly emission limitations shall be required. After the first twelve (12) months of operation, compliance with only the yearly limitations shall be required. Compliance with the yearly emission limits shall be determined on a rolling twelve (12) month total.

Since the engines commenced operation in January 2002, and have therefore been in operation for one year, the quarterly limits will not be included in the operating permit.

Due to the increase in fuel consumption as discussed above, the SO_2 and VOC emission limits were increased to 16.7 tons/yr and 11.4 tons/yr, respectively, to allow for operation up to the fuel consumption limits. The source submitted an APEN on June 4, 2003 (during the Public Comment period), requesting the increased SO_2 and VOC emission limits.

 Prior to final approval being issued, the applicant shall submit to the Division for approval an operating and maintenance plan for all control equipment and control practices, and a proposed recordkeeping format that will outline how the applicant will maintain compliance on an ongoing basis with the requirements of this permit (condition 6).

The source submitted an operating and maintenance plan, with proposed recordkeeping format on August 30, 2002, therefore this requirement will not be included in the operating permit. The operating permit will contain the necessary monitoring required to assess compliance with the permit conditions.

 Prevention of Significant Deterioration (PSD) requirements shall apply to this source at any such time that this source becomes major solely by virtue of a relaxation in any permit condition (condition 7 and Reg 3, Part B, Section IV.D.3.b.(iv)).

This condition will not be included in the operating permit, since no actual requirements apply, unless certain modifications to the permit conditions for these engines are made. Although this requirement will not be included in the permit, future modifications that cause the engines to become major, for purposes of PSD review, by virtue of relaxation of any of these permit conditions will result in the application of PSD review.

- Within 180 calendar days after startup, the source shall certify compliance with the terms and conditions for these units (condition 10 and Reg 3, Part B, Section IV.H.2)
- APEN reporting (condition 11 and Colorado Regulation No. 3, Part A Section II.C)

The APEN reporting requirements will not be identified in the permit as a specific condition but are included in Section IV (General Conditions) of the permit, condition 22.e.

Although not specifically identified in permit 01PB0247, the following requirements still apply to these units:

- SO₂ emissions shall not exceed 0.8 lbs/mmBtu (Colorado Regulation No. 1, Section VI.B.4.b.(i))
- Acid Rain requirements for new unit exemptions

For units that can take the new unit exemption and have or will be issued operating permits, the requirements in 40 CFR Part 72 §§ 72.7(a), (b)(1), (d) and (f) must be included in the operating permit.

Typically for sources that receive synthetic minor permits with NO_X permitted emission limits at 249 tons/yr, the Division requires that sources calculate emissions annually from insignificant activities and limits such emissions to 1 ton/yr. Such a requirement was not included in the construction permit for this facility, presumably because there are no other insignificant activities that are a source of NO_X emissions (i.e. fuel burning equipment). The Title V permit application identifies a chemical storage building as the only insignificant activity at the facility. However, since sources are not required to notify the Division of the addition of any equipment that is an insignificant activity (i.e. exempt from APEN reporting), which could include fuel-burning equipment, the permit will contain a requirement to calculate emissions from any future insignificant activities that emit NO_X .

2. Emission Factors - Approval of emission factors is necessary to monitor compliance with the emission limitations. The Title V permit application identifies the following proposed emission factors.

Pollutant	Proposed Emission Factor from T5 Permit Application	Source of Emission Factor	Emission Factor to be Included in the Title V permit
PM	N/A	AP-42, Section 3.5, Table 3.4-2,	0.0697 lbs/mmBtu
PM ₁₀ ¹	2.52 lbs/hr	dated October 1996	0.0573 lbs/mmBtu
SO ₂ ²	5.15 lbs/hr	Manufacturer's Guarantee	0.186 lbs/mmBtu
NO_X	96.87 lbs/hr	Performance test conducted	2.745 lbs/mmBtu
CO	22.72 lbs/hr	February 19, 2002 (Unit S003)	0.644 lbs/mmBtu
VOC ²	3.5 lbs/hr	Manufacturer's Guarantee	0.126 lbs/mmBtu

¹The emission factor to be included in the Title V permit is the published AP-42 emission factor. ²The emission factor to be included in the Title V permit is the manufacturer's guarantee, in lbs/hr divided by the design heat input rate (27.72 mmBtu/hr).

The Title V permit application indicates that the NO_X and CO emission factors are from a performance test conducted February 19, 2002 but is not clear on the source of the remaining emission factors. The most recent APEN filed for the engines (signed April 18, 2002) indicates that the PM_{10} emission factors are from AP-42 and the SO_2 and VOC emission factors are from the manufacturer.

It is not the Division's policy to allow the use of emission factors in terms of lbs/hr for permitted sources, since such an emission factor implies emissions are consistent regardless of the load or processing rate for an emission unit. Therefore the emission factors to be included in the Title V operating permit will be in units of lbs/mmBtu.

The VOC and SO_2 (based on a sulfur content of 0.07 weight percent per the Title V permit application) emission factors that will be included in the operating permit are more conservative than AP-42. Both the NO_X and CO emission factors are less conservative than AP-42 emission factors.

3. Monitoring Plan – The Division developed guidance for periodic monitoring of internal combustion engines (see attached grid). The grid provides monitoring scenarios based on whether proposed emission factors are more or less conservative than AP-42. As discussed above, the NO_x and CO emission factors is less conservative than AP-42. Under the scenario where the emission factor is less than AP-42, quarterly portable monitoring, as well as a one-time stack test is required. Since these engines will most likely be run infrequently, the Division considers that the quarterly portable monitoring is not necessary. In addition, depending on the portable monitoring results, a stack test could be triggered. Therefore, the Division considers that the one time stack test is not required. However the permitted NO_x emission limit is very close to the major stationary source level and the emission limits in the original construction permit (issued June 15, 2001) were set based on manufacturer's emission factors. Subsequent testing showed that the manufacturer's emission factors underestimated actual emissions. Therefore, since the NO_X emission limits are set so close to the major stationary source level, the Division believes that further monitoring of actual engine emissions is necessary. Therefore, the permit includes a requirement to conduct portable monitoring for the engines when hours of operation for an engine reach 1,000 hrs or annually, whichever comes first, to determine NO_X and CO emissions.

As discussed previously, the Division removed the hours of operation limit for these engines since compliance is primarily based on emission factors and fuel consumption. However, the standard portable monitoring language requires that the emission factor be verified and that compliance with the annual emission limit be monitored during the test. Compliance with the annual emission limit is based on converting the portable monitoring test data to units of lbs/hr and then multiplying the lbs/hr number by either the allowable operating hours or if no limit on hours of operation, 8760 hrs/yr. Since these engines were permitted to run significantly below 8760 hrs/yr, under the standard portable monitoring language, portable monitoring would always show non-compliance. Therefore, the portable monitoring language has been revised to require that the source multiply the lbs/hr emission rate by 1,285 hrs/yr per engine or actual annual engine operating hours, whichever is greater. The Division believes this language is appropriate, since the NO_X emission limit was based on the highest hourly NO_X emission rate (lbs/hr) determined from stack testing and 1285 hrs/yr per engine.

In addition, the source will be required to record hours of operation and fuel consumption and calculate emissions monthly to monitor compliance with the annual limitations. Based on the emission factor proposed by the source and included in the operating permit the engines are always in compliance with the

Reg 1 SO_2 limit. Based on the AP-42 emission factor (1.01S lbs/mmBtu), which includes a component for the sulfur content of the fuel, the engines are in compliance with the Reg 1 SO_2 limit provided the sulfur content of the fuel does not exceed 0.79% by weight. Therefore, the permit will specify that in the absence of credible evidence to the contrary, compliance with the Reg 1 SO_2 limit is presumed, whenever diesel fuel is used as fuel in the engines. The source will be required to sample their fuel supply semi-annually to determine the heat and sulfur content of the fuel. EPA Reference Method 9 observations shall be required to monitor compliance with the opacity requirements.

4. Compliance Status - The source indicated in their Title V permit application that the engines were in compliance with all applicable requirements.

B. Unit T01: 200,000 Gallon Diesel Fuel Storage Tank (Above Ground)

1. Applicable Requirements – The diesel fuel storage tank is addressed in the same construction permit (01PB0247) as the engines. The Title V permit application indicates that the tank was first placed into service in December 2001.

Colorado Construction Permit 01PB0247 (initial approval modification #2, issued July 22, 2002) contains the following applicable requirements:

 This source shall be limited to throughput as listed below and all other activities, operational rates and numbers of equipment as stated in the application. Monthly records of the actual consumption rate shall be maintained by the applicant and made available to the Division for inspection upon request (condition 4).

Diesel fuel processed through the storage tank shall not exceed 1,080,000 gal/yr.

It should be noted that with the latest revision of the construction permit (July 22, 2002 permit), the source submitted a revised APEN for the revision. In the revised APEN (submitted on April 30, 2002), the source indicated that they wanted to reduce the fuel consumption limit to 1,020,000 gallons/yr. Although a revised APEN was only filed for the engines, the Division believes that the same lower diesel fuel throughput limit was intended to apply to the tank also. Therefore, the Division has included a diesel fuel throughput limit of 1,020,000 gal/yr on the tank.

 The storage tank is subject to the New Source Performance Standards Requirements of Regulation No. 6, Part A, Subpart Kb, Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction Reconstruction or Modification Commenced After July 23, 1984, include but not limited to, the following (condition 8)

- Reporting and Recordkeeping requirements (§ 60.115b)
- Monitoring of operations (§ 60.115b)

Note that the construction permit incorrectly cites 40 CFR Part 60 Subpart Kb § 60.115b, the only applicable portions of 40 CFR Part 60 Subpart Kb are §§ 60.116b(a) and (b).

In addition, since the tank contains liquid with a maximum true vapor pressure less than 3.5 kPa, the tank is exempt from the NSPS general provisions (40 CFR Part 60 Subpart A, as adopted by reference in Colorado Regulation No. 6, Part A).

 APEN reporting (condition 11 and Colorado Regulation No. 3, Part A Section II.C)

The APEN reporting requirements will not be identified in the permit as a specific condition but are included in Section IV (General Conditions) of the permit, condition 22.e.

- **2. Emission Factors** The source estimated emissions from the tank using TANKS version 4.0. There is no individual VOC emission limit for the tank. The permitted VOC emission limit is for the engines and the tank combined. At the original requested diesel fuel throughput rate (1,080,000 gal/yr), estimated VOC emissions from the tank were 0.03 tons/yr. Because of the low VOC emissions from the tank, the Division does not believe it is necessary to have the source calculate monthly emissions from the tank and sum the tank emissions with the engine emissions to monitor compliance with the VOC emission limit. Therefore, no emission factors or emission calculations will be included in the permit.
- **3. Monitoring Plan –** The source will be required to retain the records required by 40 CFR Part 60 Subpart Kb. In addition, the source will be required to record the quantity of fuel processed through the tank monthly to monitor compliance with the annual limit. In the absence of credible evidence to the contrary, compliance with the VOC emission limit shall be presumed provided the diesel fuel throughput limit is not exceeded.
- **4. Compliance Status –** The source indicated in their Title V permit application that the tank was in compliance with all applicable requirements.

IV. Insignificant Activities

The source identified as a general category of insignificant activity, chemical storage areas where chemical are stored in closed containers and where total storage capacity does not exceed 5,000 gallons:

Specifically, the source indicated that there is a chemical storage building on site which is used for storage of transformer and engine oils and other chemicals used for maintenance of equipment.

V. Alternative Operating Scenarios

No alternative operating scenarios were requested for this facility.

VI. Permit Shield

The source did not request the permit shield for any non-applicable requirements.